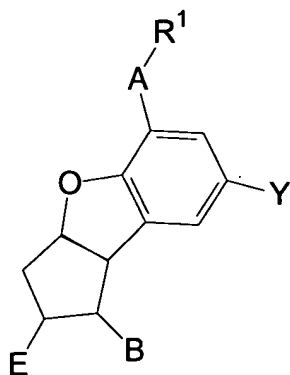


IN THE CLAIMS:

1-16. (Cancelled)

17. (Currently Amended) A method for modulating growth or generation of hair comprising administering a prostaglandin EP4 receptor ligand in an amount effective for modulating growth or generation of hair to human or an animal; wherein the said prostaglandin EP4 receptor ligand is a 5,6,7-trinor-4,8-inter-m-phenylene PGI<sub>2</sub> derivative of the following Formula (I) or a pharmacologically acceptable salt thereof:

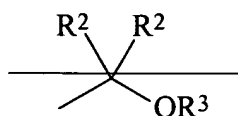


(I)

wherein

R<sup>1</sup> is

(i)



wherein  $R^2$  is hydrogen,  $C_1$ - $C_4$  linear alkyl,  $C_3$  or  $C_4$  branched alkyl, trifluoromethyl,  $C(=O)R^4$ , or  $C(=O)OR^4$ , wherein  $R^4$  is  $C_1$ - $C_{12}$  linear alkyl,  $C_3$ - $C_{14}$  branched alkyl,  $C_3$ - $C_{12}$  cycloalkyl,  $C_7$ - $C_{12}$  aralkyl, phenyl or substituted phenyl (wherein the substituent is at least one fluorine, chlorine, bromine, iodine, trifluoromethyl,  $C_1$ - $C_4$  alkyl, nitro, cyano, methoxy, phenyl, phenoxy, p-acetamidobenzamide,  $CH=N-NH-C(=O)-NH_2$ ,  $NH-C(=O)-Ph$ ,  $NH-C(=O)-CH_3$  or  $NH-C(=O)-NH_2$ ), and the two  $R^2$ 's may be the same or different,  $R^3$  is hydrogen,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_{12}$  acyl,  $C_7$ - $C_{16}$  aroyl,  $C_7$ - $C_{16}$  aralkyl, tetrahydropyranyl, tetrahydrofuranyl, 1-ethoxyethyl, allyl, tert-butyl or tert-butyl dimethylsilyl,

(ii)  $-COOR^5$

wherein  $R^5$  is

- (1) hydrogen or pharmacologically acceptable cation,
- (2)  $C_1$ - $C_{12}$  linear alkyl or  $C_3$ - $C_{14}$  branched alkyl,
- (3)  $-Z-R^6$

wherein  $Z$  is a valence bond, or linear or branched alkylene represented by the formula  $C_tH_{2t}$  wherein  $t$  represents an integer of 1 to 6,  $R^6$  is  $C_3$ - $C_{12}$  cycloalkyl, or  $C_3$ - $C_{12}$  cycloalkyl substituted with 1 to 4  $R^7$ 's wherein  $R^7$  is hydrogen or  $C_1$ - $C_5$  alkyl,

(4)  $-(CH_2CH_2O)_nCH_3$

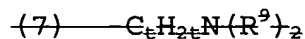
wherein  $n$  represents an integer of 1 to 5,

(5)  $-Z-Ar$

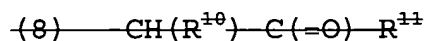
~~wherein Z is defined as the same as the above, Ar is phenyl,  $\alpha$ -naphthyl,  $\beta$ -naphthyl, 2-pyridyl, 3-pyridyl, 4-pyridyl,  $\alpha$ -furyl,  $\beta$ -furyl,  $\alpha$ -thienyl,  $\beta$ -thienyl or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above),~~



~~wherein t is defined as the same as the above,  $R^8$  is hydrogen or  $C_1$ - $C_5$ -alkyl,~~



~~wherein t is defined as the same as above,  $R^9$  is hydrogen or  $C_1$ - $C_5$ -alkyl, and the two  $R^9$ s may be the same or different,~~

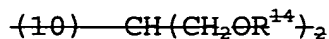


~~wherein  $R^{10}$  is hydrogen or benzoyl,  $R^{11}$  is phenyl, p-bromophenyl, p-chlorophenyl, p-biphenyl, p-nitrophenyl, p-benzamidephenyl or 2-naphthyl,~~



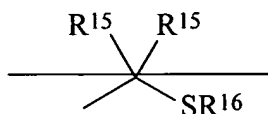
~~wherein p represents an integer of 1 to 5, W is  $CH=CH$ ,  $CH=C(R^{13})$  or~~

~~$C\equiv C$  wherein  $R^{13}$  is  $C_1$ - $C_{30}$ -linear alkyl,  $C_3$ - $C_{30}$ -branched alkyl or  $C_7$ - $C_{30}$ -aralkyl,  $R^{12}$  is hydrogen,  $C_1$ - $C_{30}$ -linear alkyl,  $C_3$ - $C_{30}$ -branched alkyl or  $C_7$ - $C_{30}$ -aralkyl, or~~



~~wherein  $R^{14}$  is  $C_1$ - $C_{30}$ -alkyl or  $C_1$ - $C_{30}$ -acyl, and the two  $R^{14}$ s may be the same or different,~~

~~(iii)~~

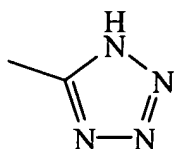


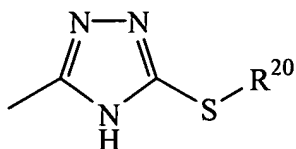
wherein  $\text{R}^{15}$  represents is hydrogen,  $\text{C}_1$ - $\text{C}_4$  linear alkyl,  $\text{C}_3$  or  $\text{C}_4$  branched alkyl, trifluoromethyl,  $\text{C}(=\text{O})-\text{R}^{17}$  or  $\text{C}(=\text{O})-\text{O}-\text{R}^{17}$  wherein  $\text{R}^{17}$  is  $\text{C}_1$ - $\text{C}_{12}$  linear alkyl,  $\text{C}_3$ - $\text{C}_{14}$  branched alkyl,  $\text{C}_3$ - $\text{C}_{12}$  cycloalkyl,  $\text{C}_7$ - $\text{C}_{12}$  aralkyl, phenyl or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above), and the two  $\text{R}^{15}$ s may be the same or different;  $\text{R}^{16}$  is hydrogen,  $\text{C}_1$ - $\text{C}_{12}$  linear alkyl,  $\text{C}_3$ - $\text{C}_{14}$  branched alkyl, phenyl or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above), or  $\text{C}(=\text{O})-\text{R}^{18}$  wherein  $\text{R}^{18}$  represents  $\text{C}_1$ - $\text{C}_{12}$  linear alkyl,  $\text{C}_3$ - $\text{C}_{14}$  branched alkyl,  $\text{C}_3$ - $\text{C}_{12}$  cycloalkyl,  $\text{C}_7$ - $\text{C}_{12}$  aralkyl, phenyl or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above),

(iv) (ii)  $-\text{CH}_2-\text{R}^{19}$

wherein  $\text{R}^{19}$  is

(1)

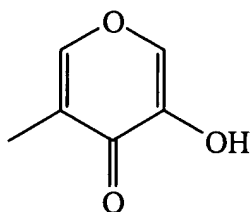




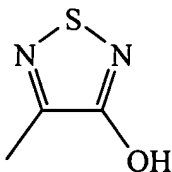
(2)

wherein  $R^{20}$  represents hydrogen,  $C_1$ - $C_{12}$  linear alkyl,  $C_3$ - $C_{14}$  branched alkyl, phenyl, substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above), or  $-C(=O)-R^{21}$  wherein  $R^{21}$  is  $C_1$ - $C_{12}$  linear alkyl,  $C_3$ - $C_{14}$  branched alkyl,  $C_3$ - $C_{12}$  cycloalkyl,  $C_7$ - $C_{12}$  aralkyl, or phenyl, ~~or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above),~~

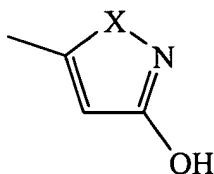
(3)



(4)



(5)



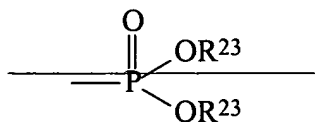
wherein X represents -O- or -S-, or

~~(6) azide,~~

~~(v)  $C(R^{22})_3$~~

~~wherein  $R^{22}$  represents hydrogen, fluorine, chlorine, bromine, iodine, cyano or  $C_1-C_4$  alkyl, and all of the  $R^{22}$ s may be the same or different,~~

~~(vi)~~



~~wherein  $R^{23}$  represents hydrogen,  $C_1-C_4$  alkyl, phenyl, substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above),  $CH_2-OR^{24}$  (wherein  $R^{24}$  is  $C_1-C_{12}$  linear alkyl,  $C_3-C_{14}$  branched alkyl,  $C_3-C_{12}$  cycloalkyl,  $C_7-C_{12}$  aralkyl, phenyl, or substituted phenyl (wherein~~

~~the substituent is the same as the substituent defined for the substituted phenyl mentioned above), or pharmacologically acceptable cation, and the two  $R^{23}$ s may be the same or different,~~

~~(vii) ———  $N(R^{25})_2$~~

~~wherein  $R^{25}$  is hydrogen,  $C_1-C_{12}$  linear alkyl,  $C_3-C_{14}$  branched alkyl,  $C_3-$~~

~~$C_{12}$  cycloalkyl,  $C_4-C_{13}$  cycloalkylalkyl,  $C_7-C_{12}$  aralkyl,  $C(=O)-R^{26}$ ,  $C(=O)-O-R^{26}$ ,~~

~~$-SO_2-R^{26}$ , phenyl or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above),  $R^{26}$  is  $C_1-C_{12}$  linear alkyl,  $C_3-C_{14}$  branched alkyl,  $C_3-C_{12}$  cycloalkyl,  $C_7-C_{12}$  aralkyl, phenyl or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above), the two  $R^{25}$ s may be the same or different (when one of the  $R^{25}$ s is  $-SO_2-R^{26}$ , the other  $R^{25}$  is not  $-SO_2-R^{26}$ ),~~

~~(viii) ———  $(C(=O)CH_2)_k-H$~~

~~wherein k is an integer of 1 or 2, or~~

~~(ix) ———  $C(=O)-N(R^{27})_2$~~

~~wherein  $R^{27}$  is hydrogen,  $C_1-C_{12}$  alkyl,  $C_3-C_{12}$  cycloalkyl, phenyl, substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above),  $C_4-C_{13}$  cycloalkylalkyl,  $C_7-C_{12}$  aralkyl, cyano or  $-SO_2-R^{28}$  wherein  $R^{28}$  is  $C_1-C_{12}$  alkyl,  $C_3-C_{12}$  cycloalkyl, phenyl, substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above),  $C_4-C_{13}$~~

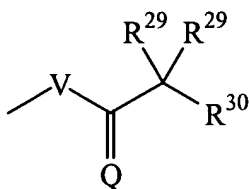
~~cycloalkylalkyl, or C<sub>7</sub>-C<sub>12</sub> aralkyl, and the two R<sup>27</sup>s may be the same or different (when one of the R<sup>27</sup>s is SO<sub>2</sub>-R<sup>28</sup>, the other R<sup>27</sup> is not~~

~~-SO<sub>2</sub>-R<sup>28</sup>)-~~

Y is hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, fluorine, chlorine, bromine, formyl, methoxy or nitro;

B is

(i)



wherein V is

(1) -CH<sub>2</sub>CH<sub>2</sub>-

(2) -C≡C-

or

(3) -CH=C(R<sup>31</sup>)-

wherein R<sup>31</sup> is hydrogen, C<sub>1</sub>-C<sub>5</sub> alkyl, fluorine, or chlorine, ~~bromine or iodine,~~

Q is

(1) =O

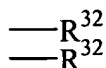
(2)

~~\_\_\_\_\_R<sup>32</sup>\_\_\_\_\_~~  
~~\_\_\_\_\_OR<sup>33</sup>\_\_\_\_\_~~

or

(3)





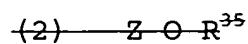
wherein  $R^{32}$  is hydrogen,  $C_1$ - $C_4$  linear alkyl,  $C_3$  or  $C_4$  branched alkyl, or trifluoromethyl,  ~~$C(=O)R^{34}$ , or  $C(=O)OR^{34}$  wherein  $R^{34}$  represents  $C_1$ - $C_{12}$  linear alkyl,  $C_3$ - $C_{14}$  branched alkyl,  $C_3$ - $C_{12}$  cycloalkyl,  $C_7$ - $C_{12}$  aralkyl, phenyl or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl mentioned above);  $R^{33}$  is hydrogen,  $C_1$ - $C_4$  alkyl,  $C_1$ - $C_{12}$  acyl, or  $C_7$ - $C_{16}$  aroyl,  ~~$C_7$ - $C_{16}$  aralkyl, tetrahydropyranyl, tetrahydrofuranlyl, 1-ethoxyethyl, allyl, tert butyl or tert-butyl dimethylsilyl, and the two  $R^{32}$ s may be the same or different;  $R^{29}$  is hydrogen, fluorine, chlorine, bromine, iodine, cyano or  $C_1$ - $C_4$  alkyl, and the two  $R^{29}$ s may be the same or different;~~~~

$R^{30}$  is

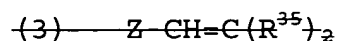
(1)  $-Z-R^{35}$

wherein  $Z$  is a valence bond, or linear or branched alkylene represented by the formula  $C_tH_{2t}$  wherein  $t$  represents an integer of 1 to 6, ~~defined as the same as the above,  $R^{35}$  is  $C_1$ - $C_{12}$  linear alkyl,  $C_3$ - $C_{14}$  branched alkyl,  $C_3$ - $C_{12}$  cycloalkyl,  $C_4$ - $C_{13}$  cycloalkylalkyl,  $C_3$ - $C_{12}$  cycloalkyl substituted with 1 to 4  $R^{36}$ s (wherein  $R^{36}$  is hydrogen or  $C_1$ - $C_5$  alkyl),  $C_4$ - $C_{13}$  cycloalkylalkyl substituted with 1 to 3  $R^{36}$ s (wherein  $R^{36}$  is defined as the same as the above), or phenyl, substituted phenyl (wherein the~~

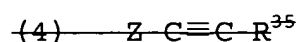
~~substituent is the same as the substituent defined for the substituted phenyl mentioned above),  $\alpha$  naphthyl,  $\beta$  naphthyl, 2-pyridyl, 3-pyridyl, 4-pyridyl,  $\alpha$  furyl,  $\beta$  furyl,  $\alpha$  thienyl or  $\beta$  thienyl,~~



~~wherein Z and R<sup>35</sup> are defined as the same as the above,~~

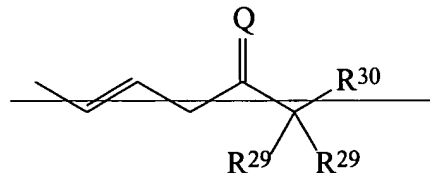


~~wherein Z and R<sup>35</sup> are defined as the same as the above, and the two R<sup>35</sup>s may be the same or different, or~~



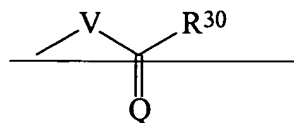
~~wherein Z and R<sup>35</sup> are defined as the same as the above,~~

~~(ii)~~



~~wherein Q, R<sup>29</sup> and R<sup>30</sup> are defined as the same as the above, and the two R<sup>29</sup>s may be the same or different, or~~

~~(iii)~~

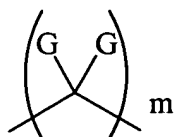


wherein V, Q and R<sup>30</sup> are defined as the same as the above;

E represents hydrogen or -OR<sup>33</sup> wherein R<sup>33</sup> is defined as the same as the above;

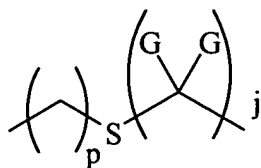
A is

(i)



wherein m represents an integer of 0 to 5 2, G represents hydrogen, ~~fluorine, chlorine, bromine, iodine, trifluoromethyl,~~ C<sub>1</sub>-C<sub>4</sub> linear alkyl or C<sub>3</sub>-C<sub>6</sub> branched alkyl, and all Gs may be the same or different,

(ii)



wherein j represents an integer of 1 to ~~4~~, p represents an integer of 0 or 1, G is defined as the same as the above, and all Gs may be the same or different,

(iii) ~~---CH=CH-CH<sub>2</sub>---~~

(iv) ~~---CH<sub>2</sub>-CH=CH---~~

(v) ~~---CH<sub>2</sub>-O-CH<sub>2</sub>---~~

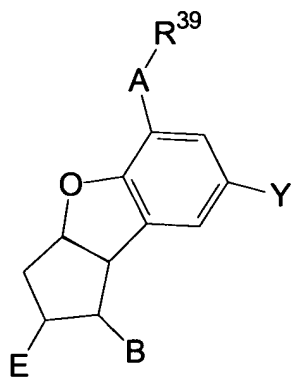
~~(vi)~~ -O-CH<sub>2</sub>-,

~~(vii)~~ (iv) -C≡C-, or

~~(viii)~~ (v) -C=C- (trans).

18-19. (Cancelled)

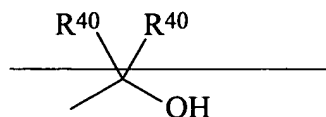
20. (Currently Amended) The method according to claim 17, wherein the said 5,6,7-trinor-4,8-inter-m-phenylene PGI<sub>2</sub> derivative is represented by the following Formula (II) ~~or a pharmacologically acceptable salt thereof:~~



(II)

wherein R<sup>39</sup> is

(i)

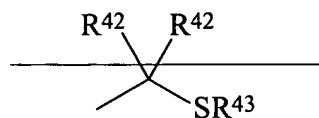


wherein  $R^{40}$  is hydrogen,  $C_1$ - $C_4$  linear alkyl or trifluoromethyl,  
the two  $R^{40}$  may be the same or different,

(ii)  $-COOR^{41}$

wherein  $R^{41}$  is hydrogen, a pharmacologically acceptable cation or  
 $C_1$ - $C_{12}$  linear alkyl,

(iii)

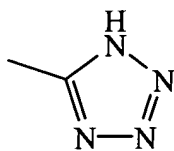


wherein  $R^{42}$  is hydrogen,  $C_1$ - $C_4$  linear alkyl or trifluoromethyl,  
the two  $R^{42}$ s may be the same or different,  $R^{43}$  is hydrogen,  $C_1$ - $C_4$   
linear alkyl, phenyl, or  $C(=O)-R^{44}$  wherein  $R^{44}$  represents  $C_1$ - $C_4$   
linear alkyl,

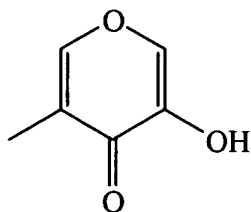
(iv) or (ii)  $-CH_2-R^{45}$

wherein  $R^{45}$  is

(1)

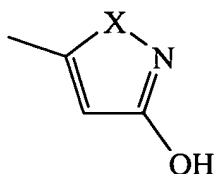


(2)

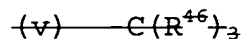


or

(3)

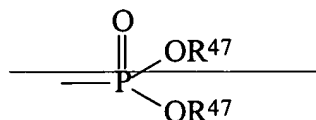


wherein X is defined in claim 17,

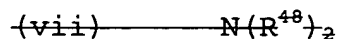


~~wherein R<sup>46</sup> represents hydrogen, fluorine, cyano or C<sub>1</sub>-C<sub>4</sub> alkyl, and all R<sup>46</sup>s may be the same or different,~~

~~(vi)~~



~~wherein R<sup>47</sup> represents hydrogen, C<sub>1</sub>-C<sub>4</sub> alkyl, or a pharmacologically acceptable cation, and the two R<sup>47</sup>s may be the same or different, or~~



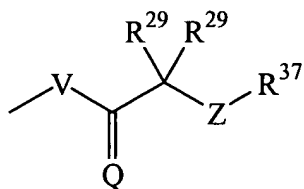
~~wherein R<sup>48</sup> is hydrogen, C(=O)-R<sup>49</sup> or SO<sub>2</sub>-R<sup>49</sup> wherein R<sup>49</sup> is C<sub>1</sub>-C<sub>4</sub> linear alkyl or phenyl, and the two R<sup>48</sup>s may be the same or~~

~~different (when one of  $R^{48}$ s is  $SO_2-R^{49}$ , the other  $R^{48}$  is not  $SO_2-R^{49}$ ),~~

~~Y is hydrogen, fluorine, chlorine or bromine,~~

B is

(i)



wherein V is

(1)  $-CH_2CH_2-$

(2)  $-C \equiv C-$

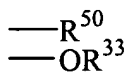
or

(3)  $-CH=CH-$

Q is

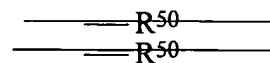
(1)  $=O-$

(2)



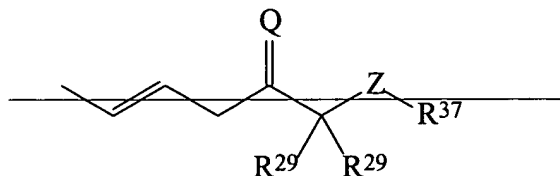
or

(3)



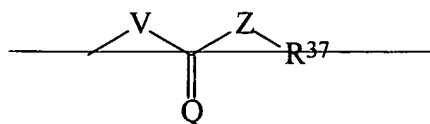
wherein  $R^{50}$  is hydrogen,  $C_1$ - $C_4$  linear alkyl,  ~~$C_3$ -or- $C_4$ -branched alkyl~~, or trifluoromethyl,  $R^{33}$  is defined in claim 17, ~~the two  $R^{50}$ s may be the same or different~~,  $R^{29}$  is defined in claim 17, and the two  $R^{29}$ s may be the same or different, Z is defined in claim 17, and  $R^{37}$  is defined in claim 17,  ~~$C_3$ - $C_{12}$ -cycloalkyl,  $C_4$ - $C_{13}$  cycloalkylalkyl,  $C_3$ - $C_{12}$ -cycloalkyl substituted with 1 to 4  $R^{38}$ s (wherein  $R^{38}$  is hydrogen or  $C_1$ - $C_5$  alkyl),  $C_4$ - $C_{13}$  cycloalkylalkyl substituted with 1 to 3  $R^{38}$ s (wherein  $R^{38}$  is defined as the same as the above), phenyl, substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl in claim 17),  $\alpha$  naphthyl,  $\beta$  naphthyl, 2-pyridyl, 3 pyridyl, 4 pyridyl,  $\alpha$  furyl,  $\beta$  furyl,  $\alpha$  thienyl or  $\beta$  thienyl,~~

(ii)



wherein Q,  $R^{29}$ , Z and  $R^{37}$  are defined as the same as the above, and the two  $R^{29}$ s may be the same or different, or

(iii)

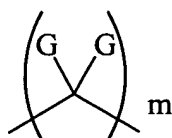




wherein V, Q, Z and  $R^{37}$  are defined as the same as the above,  
~~E represents the following in the definition of~~ is defined in  
 claim 17,

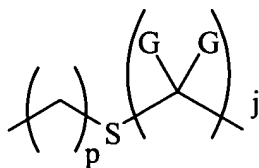
A is

(i)



wherein m represents an integer of 0 to 2 3, G is hydrogen,  
~~fluorine, chlorine, bromine, iodine, trifluoromethyl or  $C_1$ - $C_4$~~   
~~linear alkyl, and all Gs may be the same or different,~~

(ii)



wherein j represents an integer of 1 ~~or~~ 2, p represents 1 the  
~~following in the definition of claim 17,~~ G is defined as the same  
 as the above, and all Gs may be the same or different,

(iii) ~~---CH=CH-CH<sub>2</sub>---~~

(iv) ~~---CH<sub>2</sub>-CH=CH---~~

(v) ~~---CH<sub>2</sub>-O-CH<sub>2</sub>---~~

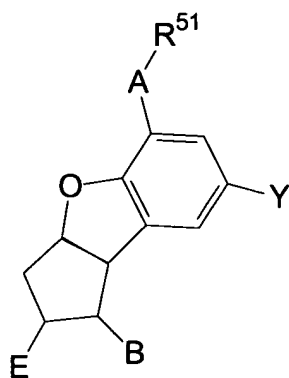
(vi) ~~-O-CH<sub>2</sub>-~~,

(vii) ~~---C≡C---~~

or

~~(viii)~~ (iv) -C=C- (trans).

21. (Amended) The method according to claim 17, wherein the said 5,6,7-trinor-4,8-inter-m-phenylene PGI<sub>2</sub> derivative is represented by the following Formula (III) ~~or a pharmacologically acceptable salt thereof~~:



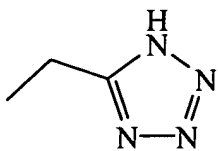
(III)

wherein R<sup>51</sup> is

(i) -COOR<sup>52</sup>

wherein R<sup>52</sup> is hydrogen, a pharmacologically acceptable cation or methyl, or

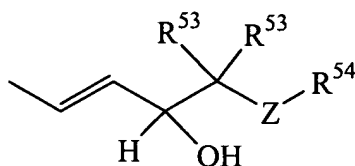
(ii)



wherein Y is hydrogen or fluorine,

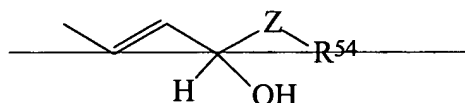
B is

(i)



wherein  $R^{53}$  is hydrogen, fluorine or  $C_1$ - $C_4$  alkyl, the two  $R^{53}$ s may be the same or different, Z represents the following in the definition of claim 17,  $R^{54}$  is  $C_5$ - $C_7$  cycloalkyl, or phenyl, ~~or substituted phenyl (wherein the substituent is the same as the substituent defined for the substituted phenyl in claim 17), or~~

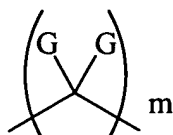
~~(ii)~~



wherein Z and  $R^{54}$  are defined as the same as the above,

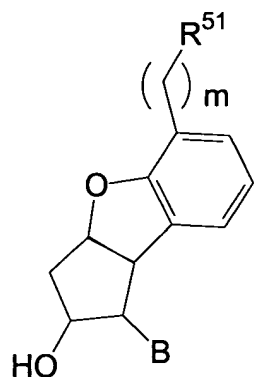
E is hydrogen or -OH,

A is



wherein m represents an integer of 0 to 2, and G represents hydrogen ~~or fluorine, and all Gs may be the same or different.~~

22. (Currently Amended) The method according to claim 17, wherein the said 5,6,7-trinor-4,8-inter-m-phenylene PGI<sub>2</sub> derivative is represented by the following Formula (IV) ~~or a pharmacologically acceptable salt thereof:~~



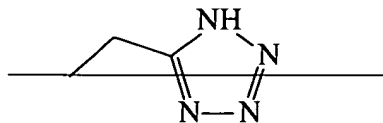
(IV)

wherein R<sup>51</sup> is defined in claim 17,

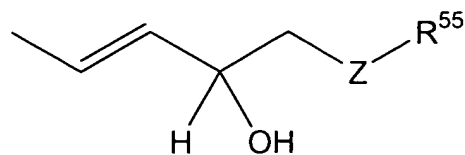
~~(i) —COOR<sup>52</sup>~~

~~wherein R<sup>52</sup> is hydrogen, a pharmacologically acceptable cation or methyl, or~~

~~(ii)~~

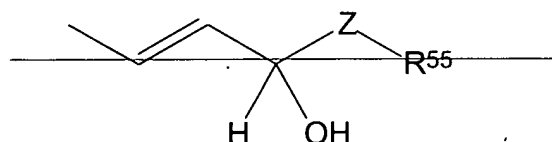


B is



(i)

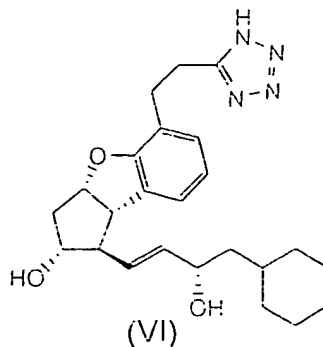
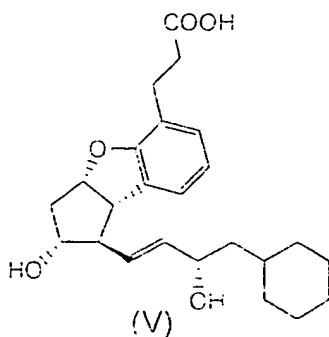
wherein Z represents ~~the following in the definition of~~ is defined in claim 17,  $R^{55}$  is  $C_5$ - $C_7$  cycloalkyl or phenyl, or



(ii)

wherein Z and  $R^{55}$  are defined as the same as the above, m represents an integer of 0 to 2.

23. (Currently Amended) The method according to claim 17, wherein ~~the~~ said 5,6,7-trinor-4,8-inter-m-phenylene  $PGI_2$  derivative is represented by the following Formula (V) or (VI):



24. (Currently Amended) The method according to any one of claims 17 and ~~19~~ 20 to 23, wherein the said method for modulating growth or generation of hair is a method for promoting growth or generation of hair.